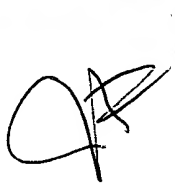

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/633,584	08/07/00	SIVILOTTI	O 62801 CCD

IM52/1022

CHRISTOPHER C DUNHAM
C/O COOPER & DUNHAM LLP
1185 AVE. OF THE AMERICAS
NEW YORK NY 10036

EXAMINER	
KERNS, K	
ART UNIT	**PAPER NUMBER**
1725	5

DATE MAILED: 10/22/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

PTO-90C (Rev. 2/95)

1- File Copy

Office Action Summary	Application No. 09/633,584	Applicant(s) SIVILOTTI ET AL.	
	Examiner Kevin P. Kerns	Art Unit 1725	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-45* is/are rejected.

7)☒ Claim(s) *2,7,19 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Specification

2. The disclosure is objected to because of the following informalities: on page 13, line 23, "manifold 84" should be changed to "manifold 89". Appropriate correction is required.

Claim Objections

3. Claims 2, 7, 19, and 24 are objected to because of the following informalities: in claims 2 and 19, line 2 of each claim, "though" should be changed to "through". In claims 7 and 24, line 2 of each claim, one of the duplicate words "liquid" should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-6, 8-23, and 25-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thorburn et al. (US 4,193,440) in view of Sivilotti et al. (US 4,061,178).

Thorburn et al. disclose a belt-cooling and guiding means for the continuous belt casting of metal strip in a twin belt caster having flexible endless belts, with the apparatus containing an array of removable, hexagonal, and planar guiding and

supporting (elongated) nozzle elements facing (adjacent to) and beveled from the reverse surface of the belt, which, in combination with liquid-withdrawal spaces (drainage areas, or gaps), form continuous slots of substantially uniform width between adjacent edges (abstract; column 1, lines 6-17 and 30-55; column 2, lines 1-25 and 44-61; column 3, lines 22-35; column 5, lines 28-46; column 6, lines 39-54; column 10, lines 1-44; and Figures 1-8). The coolant consists of a rapidly flowing layer (continuous uniform liquid film) of pressurized liquid with drainage openings covering less than 10% of the total belt surface, with the guiding face (surface) over which the coolant flows capable of moving a small amount angularly in any direction (column 2, lines 16-41; column 4, lines 13-19; column 8, lines 60-68; column 9, lines 1-8; and Figures 5-11). Thorburn et al. do not specifically disclose a vacuum system.

However, Sivilotti et al. teach an apparatus for continuous casting of metal strip between endless twin belts defining a mold space, in which a liquid coolant rapidly flows out in a layer over a multiplicity of guiding faces (abstract; column 3, lines 59-68; column 4, lines 18-56; column 5, lines 26-38; column 6, lines 47-65; and Figures 1-3 and 10-15). A subatmospheric (vacuum) pressure means to control fluid pressures and to pump the drainage means relative to the mold space is provided to advantageously force the belts toward the cooling and guiding elements (liquid layer), so that each belt is positively held in conformity with its path as defined by the faces of the elements (column 5, lines 39-49; column 15, lines 18-44; column 20, lines 32-65; column 23, lines 16-49; and Figure 15). One of ordinary skill in the art would have recognized that the dimensions of the slots and bevels would be adjustable to conform to the spacing

between a portion of the belt and each flat peripheral region of the nozzle faces, the depth and angles of concavity in the nozzle faces, and the water pressure (to obtain the fluid velocity), for the purpose of providing an optimum relationship between the belt, the water layer, and the nozzle faces (column 21, lines 54-68; and column 22, lines 1-14). It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the above parameters taught by Sivilotti et al., since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the belt-cooling and guiding means in the continuous caster of Thorburn et al., with the subatmospheric pressure means taught by Sivilotti et al., in order to positively hold each belt in conformity with its path as defined by the faces of the elements (Sivilotti et al.; column 5, lines 39-49; column 15, lines 18-44; column 20, lines 32-65; and column 23, lines 16-49).

8. Claims 7 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thorburn et al. (US 4,193,440) in view of Sivilotti et al. (US 4,061,178) as applied to claims 1 and 18 above, and further in view of Dumont-Fillon et al. (US 3,799,239).

Thorburn et al. (in view of Sivilotti et al.) disclose all the elements of claims 1 and 18 above. Neither Thorburn et al. nor Sivilotti et al. specifically discloses the use of a filter for filtering particles from the cooling liquid.

However, Dumont-Fillon et al. teach a method for continuous casting of metal in which a filter is used for providing fresh coolant and cleaning recirculated spent coolant prior to flow into the supply conduit, which is shown to be conventional in the art, for the purpose of filtering particles that would build up in narrow orifices of each nozzle, which would be detrimental to uniform cooling (column 2, lines 53-67; column 5, lines 57-67; and column 6, lines 1-2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the belt-cooling and guiding means in the continuous caster of Thorburn et al., with the subatmospheric pressure means taught by Sivilotti et al., in order to positively hold each belt in conformity with its path as defined by the faces of the elements, and further use the filtering means of Dumont-Fillon et al., in order to filter particles that would build up in narrow orifices of each nozzle, which would be detrimental to uniform cooling (Dumont-Fillon et al.; column 2, lines 53-67; column 5, lines 57-67; and column 6, lines 1-2).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin P. Kerns whose telephone number is (703) 305-3472. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for

the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-6078 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

KPK
kpk
October 17, 2001

M. ALEXANDRA ELVE
PRIMARY EXAMINER